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Nuclear LLC

JUN 04 2014

LR-N14-0138

10 CFR 50.73

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

LER 272/2014-002-00
Salem Nuclear Generating Station Unit 1
Renewed Facility Operating License No. DPR-70
NRC Docket No. 50-272

SUBJECT: Manual Reactor Trip Due to Loss of the 11 Steam Generator Feedwater Pump

The Licensee Event Report, "Manual Reactor Trip Due to Loss of the 11 Steam Generator Feedwater Pump" is being submitted pursuant to 10 CFR 50.73(a)(2)(iv)(A), as an "...event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B)..."

The attached LER contains no commitments. Should you have any questions or comments regarding the submittal, please contact David Lafleur of Salem Regulatory Assurance at 856-339-1754.

Sincerely,

John F. Perry
Site Vice President – Salem

Attachments (1)

cc Mr. W. Dean, Administrator – Region 1, NRC
Mr. J. Lamb, Licensing Project Manager – Salem, NRC
Mr. P. Finney, USNRC Senior Resident Inspector, Salem (X24)
Mr. P. Mulligan, Manager IV, NJBNE
Mr. T. Joyce, President and Chief Nuclear Officer – Nuclear
Mr. T. Cachaza, Salem Commitment Tracking Coordinator
Mr. L. Marabella, Corporate Commitment Tracking Coordinator
Mr. D. Lafleur, Salem Regulatory Assurance

NRC FORM 366 (01-2014) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 01/31/2017

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA, Privacy and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by Internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

# LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

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**4. TITLE** Manual Reactor Trip Due to Loss of the 11 Steam Generator Feedwater Pump

| 5. EVENT DATE | | | 6. LER NUMBER | | | 7. REPORT DATE | | | 8. OTHER FACILITIES INVOLVED | |
|---|---|---|---|---|---|---|---|---|---|---|
| MONTH | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REV NO. | MONTH | DAY | YEAR | FACILITY NAME | DOCKET NUMBER 05000 |
| 04 | 08 | 2014 | 2014 | - 002 | - 000 | 06 | 04 | 2014 | FACILITY NAME | DOCKET NUMBER 05000 |

| 9. OPERATING MODE | 11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)* | | | |
|---|---|---|---|---|
| 1 | ☐ 20.2201(b) | ☐ 20.2203(a)(3)(i) | ☐ 50.73(a)(2)(i)(C) | ☐ 50.73(a)(2)(vii) |
| | ☐ 20.2201(d) | ☐ 20.2203(a)(3)(ii) | ☐ 50.73(a)(2)(ii)(A) | ☐ 50.73(a)(2)(viii)(A) |
| **10. POWER LEVEL** | ☐ 20.2203(a)(1) | ☐ 20.2203(a)(4) | ☐ 50.73(a)(2)(ii)(B) | ☐ 50.73(a)(2)(viii)(B) |
| | ☐ 20.2203(a)(2)(i) | ☐ 50.36(c)(1)(i)(A) | ☐ 50.73(a)(2)(iii) | ☐ 50.73(a)(2)(ix)(A) |
| 100% | ☐ 20.2203(a)(2)(ii) | ☐ 50.36(c)(1)(ii)(A) | ☒ 50.73(a)(2)(iv)(A) | ☐ 50.73(a)(2)(x) |
| | ☐ 20.2203(a)(2)(iii) | ☐ 50.36(c)(2) | ☐ 50.73(a)(2)(v)(A) | ☐ 73.71(a)(4) |
| | ☐ 20.2203(a)(2)(iv) | ☐ 50.46(a)(3)(ii) | ☐ 50.73(a)(2)(v)(B) | ☐ 73.71(a)(5) |
| | ☐ 20.2203(a)(2)(v) | ☐ 50.73(a)(2)(i)(A) | ☐ 50.73(a)(2)(v)(C) | ☐ OTHER |
| | ☐ 20.2203(a)(2)(vi) | ☐ 50.73(a)(2)(i)(B) | ☐ 50.73(a)(2)(v)(D) | Specify in Abstract below or in NRC Form 366A |

**12. LICENSEE CONTACT FOR THIS LER**

| FACILITY NAME | TELEPHONE NUMER *(Include Area Code)* |
|---|---|
| David Lafleur, Senior Compliance Engineer, Salem Regulatory Assurance | (856) 339-1754 |

**13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT**

| CAUSE | SYSTEM | COMPONENT | MANU-FACTURER | REPORTABLE TO EPIX | CAUSE | SYSTEM | COMPONENT | MANU-FACTURER | REPORTABLE TO EPIX |
|---|---|---|---|---|---|---|---|---|---|
| B | SJ | 65 | W290 | Yes | | | | | |

| 14. SUPPLEMENTAL REPORT EXPECTED | 15. EXPECTED SUBMISSION DATE | MONTH | DAY | YEAR |
|---|---|---|---|---|
| ☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO | | | | |


ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On April 8, 2014 at 2112, Salem Unit 1 control room operators received an alarm indicating failure of the 12 Essential Controls Inverter. At 2113, operators observed indications of a trip of the 11 Steam Generator Feedwater Pump (SGFP). Operators manually initiated a Main Turbine automatic runback by manually tripping the 11 SGFP in accordance with procedures. At 2114, operators manually tripped the reactor due to a low level in the 13 Steam Generator (SG). All control rods fully inserted on the trip. All three Auxiliary Feedwater (AFW) pumps started as expected in response to low SG levels and decay heat was removed by the steam dumps to the main condenser. Operators entered the emergency procedures for the plant trip and stabilized the plant in Mode 3 (HOT STANDBY).

The cause of this event was due to a loss of power to the 11 SGFP speed probes. A ground on the electrical bus providing power to the speed probes was repaired.

This report is made in accordance with 10 CFR 50.73(a)(2)(iv)(A), "any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B)" for a manual reactor trip and automatic actuation of the AFW system.

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**NARRATIVE**

## PLANT AND SYSTEM IDENTIFICATION

Westinghouse - Pressurized Water Reactor (PWR/4)

Main Feedwater System {SJ/-}

## IDENTIFICATION OF OCCURRENCE

Event Date: April 8, 2014

Discovery Date: April 8, 2014

## CONDITIONS PRIOR TO OCCURRENCE

Salem Unit 1 was in operational Mode 1, operating at 100 percent rated thermal power. No additional structures, systems or components were inoperable at the time of discovery that contributed to this event.

## DESCRIPTION OF OCCURRENCE

On April 8, 2014 at 2112, Salem Unit 1 control room operators received an alarm indicating failure or swap-over of the 12 Essential Controls Inverter followed shortly after by a SGFP {SJ/P} Speed Deviation alarm. At 2113, operators received indications of failure of the 11 SGFP as evidenced by an increase in 12 SGFP flow to maximum, Feedwater Control Valve positioner demands at 100 percent, and decreasing SG levels. A Main Turbine automatic runback was initiated by manually tripping the 11 SGFP in accordance with alarm response procedure guidance. A boration of the reactor coolant system was commenced in accordance with procedure.

Operators monitored SG levels which lowered throughout the transient due to insufficient recovery of SG secondary side inventories. At 2114, the reactor was manually tripped in accordance with abnormal operating procedures when narrow range level in the 13 SG reached 16 percent. The SG Low-Low level reactor trip setpoint is 14 percent.

All control rods fully inserted on the trip. All three AFW pumps started automatically as expected in response to low SG levels and decay heat was removed by the steam dumps to the main condenser. Operators entered the emergency procedures for the plant trip and stabilized the plant in Mode 3 (HOT STANDBY).

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NARRATIVE

## CAUSE OF OCCURRENCE

115V AC power is supplied to the 11 SGFP governor controls and supervisory instrumentation from breaker 8 on the 12 Miscellaneous AC (MAC) panel. The 12 MAC panel is supplied by the 12 Essential Controls Inverter. A chafed wire to a test limit switch on 11MS43, SGFP Turbine High Pressure Stop Valve, caused a hard ground to occur, opening breaker 8 on the 12 MAC panel and actuating the 12 Essential Controls Inverter Failure alarm in the control room. With breaker 8 opened, 115V AC power was lost to the 11 SGFP speed probe power supplies. The 11 SGFP Governor then sensed the loss of all speed signals which resulted in the 11 SGFP control valves going to minimum speed position. In accordance with procedure, operator response to these indications is to manually trip the 11 SGFP to initiate a Main Turbine runback.

## PREVIOUS OCCURRENCES

A review of Licensee Event Reports at Salem Station dating back to 2010 identified one other similar event. LER 311/2010-002, "Automatic Reactor Trip Due to 21 Steam Generator Feedwater Pump Trip and Steam Generator Low Level" describes a trip of the 21 SGFP due to a wiring short in the 12 SGFP trip control circuit that resulted in a false low suction pressure trip signal.

## SAFETY CONSEQUENCES AND IMPLICATIONS

There were no safety consequences associated with this event. Operators appropriately responded to plant conditions to manually trip the reactor and shutdown the plant. All plant safety systems operated as required.

A review of this event determined that a Safety System Functional Failure (SSFF) as defined in Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment Performance Indicator Guidelines, did not occur.

## CORRECTIVE ACTIONS

1. All wires going to the 11MS43 test limit switch were replaced and tested to eliminate the ground.

2. A root cause evaluation is in progress to identify the root cause, extent of condition, and other corrective actions to prevent similar events.

## COMMITMENTS

No commitments are made in this LER.